

Overview of SLS Aeroacoustic Environment Development

The Space Launch System (SLS) ascent aeroacoustic environments provide the externally driven noise levels predicted for vehicle ascent during transonic and supersonic flight, and serve as an important input for component and secondary structure vibroacoustic design criteria. This aerodynamically induced noise is predominantly generated by unsteady flow within the local boundary layer due to free stream interaction with the outer mold line (OML). Additional sources are shear flow interactions, shocks, protuberance flows, and wake flows. This presentation provides an overview of the aeroacoustics discipline along with the SLS environment development process, including wind tunnel testing and general data reduction methods. The state of the discipline is also presented with a summary of aeroacoustic measurement and computational techniques currently on the horizon.